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Post Harvest Losses In Fisheries: A Barrier To Marine Export Growth In India

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Abstract

India stands as the third-largest fish producer in the world. Despite this achievement, its fisheries exports have been constrained by significant post-harvest losses in fisheries (PHLF), estimated at 25-30%, caused by inadequate infrastructure, weak cold-chain networks, and poor value addition. These inefficiencies undermine both domestic livelihoods and India's competition in global seafood markets. PHLF is therefore a matter of serious concern for the country, as it significantly compromises the immense potential of its blue economy. This paper explores the ways in which PHLF limits India's fish export potential, calling for the urgency of port logistics modernisation while positioning PHLF mitigation as both an economic necessity and socio-political imperative towards livelihoods and the blue economy.

Keywords: *Fisheries, Post-Harvest Losses in India, infrastructure, cold-chain, exports*

1 Introduction

The fisheries sector has emerged as a critical pillar of agricultural transformation, food security, and livelihood generation worldwide. In India, the fisheries sector contributes nearly 1.07% to the National Gross Domestic Product (GDP) and 6.72% to agricultural Gross Domestic Product (GDP) (MoFAHD, 2022-23), supporting the livelihoods of approximately 14 million people directly engaged in fishing and aquaculture. Despite this, the sector continues to face significant inefficiencies,

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particularly in the form of post-harvest losses (PHL), which in turn reduce profitability, undermine export competitiveness, and compromise the income security of fisherfolk. Globally, developing countries lose about 20-25% of fish harvests post-harvest, largely due to weak infrastructure, poor marketing, and inadequate cold-chain systems. In Ethiopia's Amhara region, such inefficiencies caused losses of 164.4 tons of fish between 2012-2018, amounting to over USD 397,600, which underscores how systemic gaps undermine both livelihoods and national productivity.

Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched in 2020 with an outlay of Rs. 200,500 million to drive a "Blue Revolution" and consolidate fragmented fisheries initiatives. Positioned as the country's most ambitious fisheries policy, PMMSY aims to enhance productivity, modernise the value chain, double fishers' incomes, boost exports, and ensure social and economic security. A critical focus is on strengthening post-harvest management, as PHLF, estimated at 10-25% or about Rs. 610,000 million annually, directly undermines India's export targets. While PMMSY envisioned doubling exports from Rs. 465,890 million in 2018-2019 to Rs. 1,000,000 million by 2024, actual exports in 2021-2022 were only Rs. 575,860 million. Comparative port-level data highlights how deficits in infrastructure and PHLF constrain India's global competitiveness, making modernisation of post-harvest systems not just a technical but an economic necessity.

This paper, therefore, analyses the policy objective of modernising and strengthening the fisheries value chain, with special emphasis on post-harvest management and quality improvement, as the fulcrum for achieving PMMSY's broader goals of inclusive growth, enhanced productivity, and global competitiveness. By situating India's experience alongside international evidence on post-harvest fish losses, the study seeks to critically assess how reducing inefficiencies in the value chain can be translated into sustainable livelihoods, improved nutritional security, and strengthened export performance.

2 Methodology

This study employs a qualitative policy analysis approach supported by quantitative insights to examine how post-harvest losses in fisheries (PHLF) constrain the export

potential of India. The methodology adopted here is primarily based on secondary data analysis and review of existing literature, drawing from both national and international sources. Official government publications, including the Handbook of Fisheries Statistics, Annual Reports of the Ministries of Fisheries, Animal Husbandry and Dairying, and reports of the Parliamentary Standing Committee, were assessed to capture trends in fisheries production, contribution to GDP, and export earnings, alongside academic studies on fisheries and post-harvest management.

To assess the export implications of PHLF, port-wise export performance between 2010 and 2022 was analysed and logistics capacities across ports. Through this combination of literature review, secondary data analysis, and institutional mapping, the study attempts to understand and address the impact of PHLF on the export potential of fish and fish products from India.

3 Review of Literature

Post-harvest losses in fisheries have long been recognised as a critical challenge for food security and fisher livelihoods, with global estimates ranging between 30-60% across different contexts. Scholarships in this domain has advanced considerably in terms of measurement techniques and typologies. For instance, international research such as Ayalew et al. (2018) applies rigorous FAO-recommended field methods to generate micro-level estimates of physical and monetary losses, identify proximate causes, and highlight differentiated policy needs. In parallel synthesis studies like Keerthana et al. (2022) aggregate national and cross-country data to categorise drivers and interventions, framing the magnitude of the problem at scale. Collectively, this literature shows that PHLF is not only a technical concern but also a governance issue, with direct implications for markets, livelihoods and food systems.

In India, even as one of the largest inland and marine fish producers, scholarly studies on PHLF are scarce and primarily descriptive. Most of the literature is based on policy documents such as the Pradhan Mantri Matsya Sampada Yojana (PMMSY) that set out high-level goals but contribute little in the way of empirical data on effectiveness, heterogeneity, or governance constraints. There are few peer-reviewed micro-studies that use hard diagnostics, with key evidence gaps remaining in how to design cost-effective and localised interventions. Ayalew et

al.'s (2018) Ethiopian case shows the scale of the problem: with FAO field procedures and Generalised Linear Model, GLM models, it estimated a 1-7 kg per fisher loss per day and total weight losses of up to 46%, equivalent to close to USD 400,000 over six years. The results are indicative of the significance of cold-chain facilities, value-preserving technologies (e.g., salting, sun-drying), and geographically segmented interventions. Institutional actions- cooperatives, market diversification, and legal enforcement- were also hinted at though not elaborated on.

These findings are applicable to India's context, with weak conservation systems, splintered cold-chains, and market uncertainty prejudicing small fishers in disproportionate ways and leading to severe income loss. Operationalizing PMMSY by way of focused cold-chain investments, value-addition, and robust institutional coordination is therefore essential to addressing systemic inefficiencies and allowing India to achieve its full fisheries export potential.

Throughout the literature, PHLF drivers are consistently listed as poor cold-chains, thermal spoilage, distance to market, bad handling, and seasonality. However, Ayalew demonstrates these differ by lake and actor, highlighting the constraints of one-size-fits-all solutions. Intervention measures range from low-cost preservation (salting, sun-drying) to high-capital infrastructure (cold storage, chilling). International reviews recommend multi-level, cost-effective measures, whereas Indian initiatives such as PMMSY institutionalise these through large-scale funding and the development of infrastructure.

Yet, gaps in governance and implementation are still essential. Research warns that infrastructure cannot deal with structural problems such as wholesaler dependency, behavioral limitations, or ineffective monitoring systems. Notably, equity and livelihood aspects- losses to the income of fishermen, welfare impacts, and inclusive targeting in PMMSY- are under-researched yet important to successful reduction of PHLF.

In summary, PHLF is a quantifiable economic and nutritional problem to be addressed with context-specific technical, market, and governance interventions. Whereas micro-level evidence highlights the necessity for site-specific interventions, macro frameworks offer the policy scaffolding, with achievement

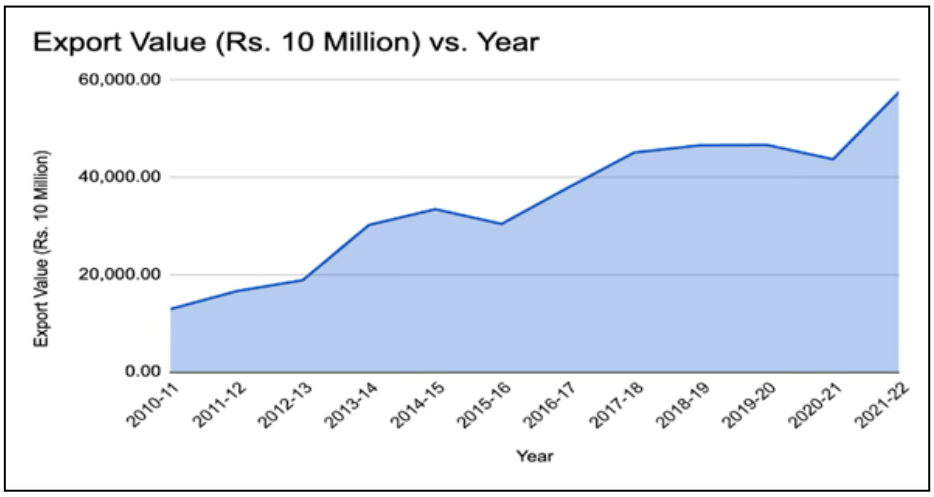
depending finally on closure of the evidence- governance gap through pilots, assessments, and local empowerment.

4 Key findings and discussion

The analysis of post-harvest fisheries loss in connection with the export of fish and fish products assumes importance due to the significant relation the former share with the latter. According to the Department of Fisheries, the poor post-harvest facilities in India lead to wastage of 25% to 30 % of fisheries resources in India. The gravity of this issue is highlighted in a report by the Parliamentary Standing Committee on Agriculture that finds Rs. 610,000 million worth of annual post-harvest losses in the production of marine and freshwater fisheries in India. The PHLF is, therefore, of major concern to India as it heavily compromises with the share of fish and fish products exported from here. This significantly slashes the income generated by the blue economy.

Through the scheme of PMMSY, India aims to double its export earnings in the fisheries sector from Rs. 465,890 million in 2018-2019 to about Rs 1,000,000 million by 2024-2025. However, the data from the latest Handbook of Fisheries Statistics shows the following trend (Figure:1). In the FY 2021-2022, the share of fish and fish products in export value in million was just at Rs. 575,860 which is way below the anticipated export value of Rs. 1,000,000 million just two financial years before the targeted FY 2024-2025. This is where the PHLF value of Rs. 610,000 million mentioned earlier assumes relevance.

Figure 1: Graph showing the export value of fish and fish products from India for various years (Source: Handbook on Fisheries Statistics, 2023)

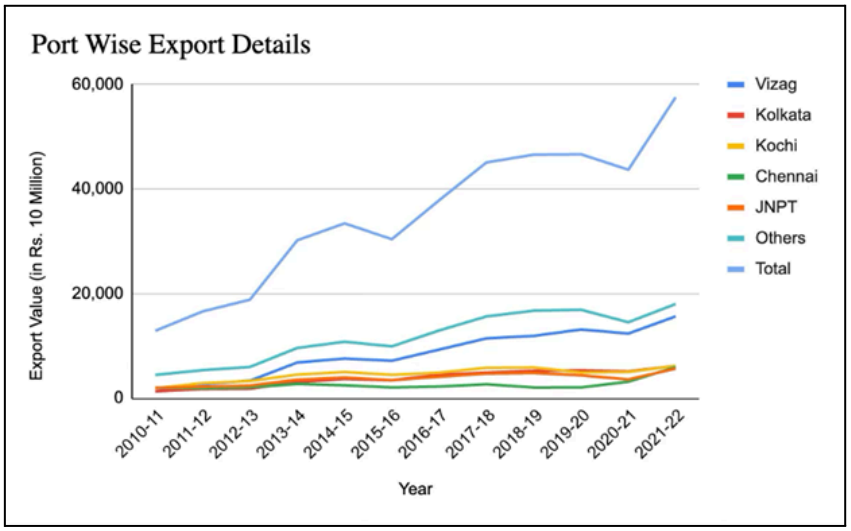


Similarly, if we look at the export of fish and fish products from the major ports in India from 2010-2011 to 2021-2022, except for Vizag and Others (combined data for the ports not included individually), there is no significant increase in the amount of exports from the rest of the ports. For instance, the export in value in 2010-2011 from Chennai (the then largest single contributor) was at Rs. 19,800 million but that of Vizag only at Rs. 13,000 million. Fast forward to 2021-2022, there is a reversal in the trend with Vizag exporting fish and fish products worth Rs. 156,490 million compared to Rs. 59,470 million from Chennai. This astounding growth of Vizag port can be attributed to the Cold-chain logistics and modern processing facilities it has acquired through these years. Chennai now appears like an 'early leader, later laggard'. While Vizag had 1100% growth over the years, Chennai had only 200% growth. Limited hinterland connectivity might be the reason why Kochi's contribution has flattened after an initial surge. Meanwhile Kolkata and Jawaharlal Nehru Port Trust (JNPT) show steady but slow growth probably due to infrastructure bottlenecks and port congestion. This shows the need to develop the needed infrastructure and institutional requirements to enable timely export of the fish products from the various ports across the country.

Table 1: Relative Growth Comparison (2010-11 vs. 2021-22) of various ports in India in relation to fish and fish products (Source: Handbook on Fisheries Statistics, 2023)

Port	2010-11 (₹ 10 Million)	2021-22 (₹ 10 Million)	Growth (%)
Vizag	1300	15649	1103
Chennai	1980	5947	200
Kochi	1892	6168	226
Kolkata	1314	6169	369
JNPT (Mumbai)	1971	5644	186
Others	4445	18010	305

Figure 2: Port wise export details about fish and fish products from India (Source: Handbook on Fisheries Statistics, 2023)



The data above shows how export of fish and fish products is directly linked to the infrastructural facilities of the ports. It is also related to the PHLF as losses incurred can significantly come down with the increased hinterland connectivity, turn-around time in ports etc.

5 Conclusion

In short, PHLF brings in a serious setback to India's fisheries sector and thereby slashes the potential of its blue economy. The estimated PHLF at Rs.600,000 million not only offset the export gains but also hinders the wider national objectives of food security, sustainable livelihood, employment generation and income generation. These issues can be addressed through committed investment in infrastructure, cold-chain logistics, and value-chain modernisation. Moreover, ensuring efficient and timely export of fish and fish products from the major ports across India is of utmost importance. The analysis has also shown that while Vizag port is performing better in this regard, the data points from other major ports have painted a pale graph. Better hinterland connectivity and institutional support in the form of infrastructural investment can definitely augment their export performance. These measures must be well complemented by capacity building programmes for farmers to minimise PHLF due to poor handling. There is a clear dearth of relevant literature on PHLF in India. Therefore, this study eventually opens up the scope for further research to better understand the impact of PHLF on the Indian economy and how it affects different fishing communities along the "happening" coastal lines of India.

References

Ahmed, A. A. (2008). Post-harvest losses of fish in developing countries. Nutritional Health, 19(3), 273–287. https://doi.org/10.1177/026010600801900403

Central Institute of Fisheries Technology. (n.d.). Publications. ICAR-CIFT. https://cift.res.in/publications

Department of Fisheries. (2020). Handbook on fisheries statistics 2020. Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. https://dof.gov.in/sites/default/files/2021-02/Final_Book.pdf

Department of Fisheries. (2020). Pradhan Mantri Matsya Sampada Yojana operational guidelines. Ministry of Fisheries, Animal Husbandry and Dairying, Government of India.https://nfdb.gov.in/PDF/PMMSY-Guidelines24-June2020.pdf

Department of Fisheries. (2023). Annual report 2022-23. Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. https://dof.gov.in/sites/default/files/2023-04/Final_Annual_Report_2022-23_English.pdf

Food and Agriculture Organization. (2024). The state of world fisheries and aquaculture 2024. https://www.fao.org/publications/home/fao-flagship-publications/the-state-of-world-fisheries-and-aquaculture/en

Marine Products Export Development Authority. (2020). MPEDA newsletter, 8(3). https://mpeda.gov.in/wp-content/uploads/2021/02/MNL-JUNE-2020-English.pdf

Ministry of Statistics and Programme Implementation. (2023). Periodic Labour Force Survey (PLFS) annual report 2022-23. Government of India. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1966154

WorldFish. (2021). ICAR-CGIAR W3 research collaboration programme annual report April 2021–March 2022. https://worldfishcenter.org/publication/icaricar-cgiar-w3-research-collaboration-programannual-reportapril-2021-march-2022